

CLAIM AMENDMENTS

- 1 1. (Currently Amended) A method of determining a Layer 2 path between a source  
2 device and a destination device in a switched network, the method comprising the  
3 computer-implemented steps of:  
4 determining a Layer 3 path between the source device and the destination device,  
5 wherein the Layer 3 path comprises information identifying two or more  
6 Layer 3 devices;  
7 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,  
8 based on a spanning tree that is associated with a relevant VLAN for said each  
9 contiguous pair of Layer 3 devices; and  
10 concatenating the subpaths to result in creating and storing information representing  
11 the Layer 2 path.
- 1 2. (Currently Amended) The method as recited in Claim 1, wherein determining a  
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:  
3 determining a first interface on a first node of the contiguous pair that is connected to  
4 a second interface on a second node of the contiguous pair for a given subnet;  
5 and  
6 selecting [[a]] the relevant VLAN between the first and second nodes of the  
7 contiguous pair based on the first and second interfaces; and  
8 gathering current spanning tree information for the relevant VLAN.
- 1 3. (Currently Amended) The method as recited in Claim 2, wherein selecting [[a]] the  
2 relevant VLAN between the first and second nodes of the contiguous pair comprises  
3 the steps of:  
4 selecting a matching native VLAN of the first and second nodes of the contiguous pair  
5 as the relevant VLAN when the first interface and the second interface of the  
6 first and second nodes respectively of the contiguous pair are non-VLAN  
7 trunking interfaces;

8 selecting a matching active VLAN that is designated to carry traffic to a next hop as  
9 the relevant VLAN when the first interface and the second interface of the first  
10 and second nodes respectively of the contiguous pair are VLAN trunking  
11 interfaces; and  
12 selecting a native VLAN that is on a non-VLAN trunking interface as the relevant  
13 VLAN when one of the first and second nodes of the contiguous pair has the  
14 non-VLAN trunking interface.

1 4. (Currently Amended) The method as recited in Claim 1, wherein determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises the steps of:  
3 tracing a first path segment from a first node of the contiguous pair by following [[a]]  
4 the spanning tree associated with [[a]] the relevant VLAN for the contiguous  
5 pair to a root of the spanning tree;  
6 tracing a second path segment from a second node of the contiguous pair by following  
7 the spanning tree associated with the relevant VLAN for the contiguous pair to  
8 the root of the spanning tree; and  
9 concatenating the first and second path segments to result in creating and storing the  
10 subpath for the contiguous pair.

1 5. (Original) The method as recited in Claim 4, wherein concatenating the first path  
2 segment and the second path segment to result in creating and storing the subpath for  
3 the contiguous pair includes the step of eliminating extraneous devices from the first  
4 and second path segments.

1 6. (Original) The method as recited in Claim 1, wherein concatenating the subpaths to  
2 result in creating and storing information representing the Layer 2 path includes the  
3 step of eliminating extraneous devices from the subpaths.

1 7. (Original) A method of determining a Layer 2 path between a source device and a  
2 destination device in a switched network, the method comprising the computer-  
3 implemented steps of:

4           determining a Layer 3 path between the source device and the destination device,  
5                 wherein the Layer 3 path comprises information identifying two or more Layer  
6                 3 devices;  
7           identifying contiguous pairs of Layer 3 devices in the Layer 3 path;  
8           determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path;  
9           determining whether any contiguous pair of Layer 3 devices has no subpath;  
10          concluding that there is no Layer 2 path when any contiguous pair of Layer 3 devices  
11                 has no subpath;  
12          eliminating extraneous devices in the subpaths; and  
13          concatenating the subpaths to result in creating and storing information representing  
14                 the Layer 2 path when each of the contiguous pairs of Layer 3 devices has a  
15                 subpath.

- 1    8.   (Previously Presented) The method as recited in Claim 7, wherein determining a  
2           subpath for each contiguous pair of Layer 3 devices comprises the steps of:  
3           determining a first interface on a first node of the contiguous pair that is connected to  
4                 a second interface on a second node of the contiguous pair for a given subnet  
5                 when both the first node of the contiguous pair and the second node of the  
6                 contiguous pair have non-trunking interfaces;  
7           determining a first native VLAN of the first interface and a second native VLAN the  
8                 second interface;  
9           determining whether the first native VLAN matches the second native VLAN;  
10          selecting the matching VLAN as a relevant VLAN between the first and second nodes  
11                 of the contiguous pair when the first native VLAN matches the second native  
12                 VLAN;  
13          gathering a current spanning tree information for the relevant VLAN;  
14          tracing a first path segment from the first node of the contiguous pair to a root of the  
15                 spanning tree by following the current spanning tree information associated  
16                 with the relevant VLAN to the root of the spanning tree;  
17          tracing a second path segment from the second node of the contiguous pair to the root  
18                 of the spanning tree by following the current spanning tree information  
19                 associated with the relevant VLAN;

20 eliminating extraneous devices in the first and second path segments; and  
21 concatenating the first path segment and the second path segment to result in creating  
22 and storing the subpath for the contiguous pair.

1 9. (Previously Presented) The method as recited in Claim 7, wherein determining a  
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:  
3 determining a non-trunking node of the contiguous pair when one of the nodes of the  
4 contiguous pair for a given subnet has a non-trunking interface and the other  
5 node of the contiguous pair has a trunking interface;  
6 determining the non-trunking interface on the non-trunking node of the contiguous  
7 pair as a first interface that is connected to a second interface on the other node  
8 of the contiguous pair;  
9 determining a native VLAN on the first interface;  
10 determining whether there is an active VLAN on the second interface that matches the  
11 native VLAN on the first interface;  
12 selecting the matching VLAN as a relevant VLAN between the non-trunking node and  
13 the other node of the contiguous pair when there is an active VLAN on the  
14 second interface that matches the native VLAN on the first interface;  
15 gathering a current spanning tree information for the relevant VLAN;  
16 tracing a first path segment from the non-trunking node of the contiguous pair to a root  
17 of the spanning tree by following the current spanning tree information  
18 associated with the relevant VLAN to the root of the spanning tree;  
19 tracing a second path segment from the other node of the contiguous pair to the root of  
20 the spanning tree by following the current spanning tree information associated  
21 with the relevant VLAN;  
22 eliminating extraneous devices in the first and second path segments; and  
23 concatenating the first path segment and the second path segment to result in creating  
24 and storing the subpath for the contiguous pair.

1 10. (Previously Presented) The method as recited in Claim 7, wherein determining a  
2 subpath for each contiguous pair of Layer 3 devices comprises the steps of:

3       determining a first interface on a first node of the contiguous pair that is connected to  
4             a second interface on a second node of the contiguous pair for a given subnet  
5       when both the first node of the contiguous pair and the second node of the  
6             contiguous pair have non-trunking interfaces; and  
7       determining a first active VLAN of the first interface associated with the given subnet  
8             and a second active VLAN the second interface associated with the given  
9             subnet;  
10       determining whether the first active VLAN matches the second active VLAN;  
11       selecting the matching VLAN as a relevant VLAN between the first and second nodes  
12             of the contiguous pair when the first active VLAN matches the second active  
13             VLAN;  
14       gathering a current spanning tree information for the relevant VLAN;  
15       tracing a first path segment from the first node of the contiguous pair to a root of the  
16             spanning tree by following the current spanning tree information associated  
17             with the relevant VLAN to the root of the spanning tree;  
18       tracing a second path segment from the second node of the contiguous pair to the root  
19             of the spanning tree by following the current spanning tree information  
20             associated with the relevant VLAN;  
21       eliminating extraneous devices in the first and second path segments; and  
22       concatenating the first path segment and the second path segment to result in creating  
23             and storing the subpath for the contiguous pair.

- 1   11.   (Currently Amended) A computer-readable medium carrying one or more sequences  
2       of one or more instructions for determining a Layer 2 path between a source device  
3       and a destination device in a switched network, the one or more sequences of one or  
4       more instructions including instructions which, when executed by one or more  
5       processors, cause the one or more processors to perform the steps of:  
6       determining a Layer 3 path between the source device and the destination device,  
7             wherein the Layer 3 path comprises information identifying two or more  
8             Layer 3 devices;

9 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,  
10 based on a spanning tree that is associated with a relevant VLAN for said each  
11 contiguous pair of Layer 3 devices; and  
12 concatenating the subpaths to result in creating and storing information representing  
13 the Layer 2 path.

1 12. (Currently Amended) The computer-readable medium as recited in Claim 11, wherein  
2 determining a subpath for each contiguous pair of Layer 3 devices comprises the steps  
3 of:  
4 determining a first interface on a first node of the contiguous pair that is connected to  
5 a second interface on a second node of the contiguous pair for a given subnet;  
6 and  
7 selecting ~~[[a]]~~ the relevant VLAN between the first and second nodes of the  
8 contiguous pair based on the first and second interfaces; and  
9 gathering current spanning tree information for the relevant VLAN.

1 13. (Currently Amended) The computer-readable medium as recited in Claim 12, wherein  
2 selecting ~~[[a]]~~ the relevant VLAN between the first and second nodes of the  
3 contiguous pair comprises the steps of:  
4 selecting a matching native VLAN of the first and second nodes of the contiguous pair  
5 as the relevant VLAN when the first interface and the second interface of the  
6 first and second nodes respectively of the contiguous pair are non-VLAN  
7 trunking interfaces;  
8 selecting a matching active VLAN that is designated to carry traffic to a next hop as  
9 the relevant VLAN when the first interface and the second interface of the first  
10 and second nodes respectively of the contiguous pair are VLAN trunking  
11 interfaces; and  
12 selecting a native VLAN that is on a non-VLAN trunking interface as the relevant  
13 VLAN when one of the first and second nodes of the contiguous pair has the  
14 non-VLAN trunking interface.

1 14. (Currently Amended) The computer-readable medium as recited in Claim 11, wherein  
2 determining a subpath for each contiguous pair of Layer 3 devices further comprises  
3 the steps of:  
4 tracing a first path segment from a first node of the contiguous pair by following [[a]]  
5 the spanning tree associated with [[a]] the relevant VLAN for the contiguous  
6 pair to a root of the spanning tree;  
7 tracing a second path segment from a second node of the contiguous pair by following  
8 the spanning tree associated with the relevant VLAN for the contiguous pair to  
9 the root of the spanning tree; and  
10 concatenating the first and second path segments to result in creating and storing the  
11 subpath for the contiguous pair.

1 15. (Original) The computer-readable medium as recited in Claim 14, wherein  
2 concatenating the first path segment and the second path segment to result in creating  
3 and storing the subpath for the contiguous pair includes the step of eliminating  
4 extraneous devices from the first and second path segments.

1 16. (Original) The computer-readable medium as recited in Claim 11, wherein  
2 concatenating the subpaths to result in creating and storing information representing  
3 the Layer 2 path includes the step of eliminating extraneous devices from the  
4 subpaths.

1 17. (Previously Presented) A computer-readable medium carrying one or more sequences  
2 of one or more instructions for determining a Layer 2 path between a source device  
3 and a destination device in a switched network, the one or more sequences of one or  
4 more instructions including instructions which, when executed by one or more  
5 processors, cause the one or more processors to perform the steps of:  
6 determining a Layer 3 path between the source device and the destination device,  
7 wherein the Layer 3 path comprises information identifying two or more  
8 Layer 3 devices;  
9 identifying contiguous pairs of Layer 3 devices in the Layer 3 path;

10 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path;  
11 determining whether any contiguous pair of Layer 3 devices has no subpath;  
12 concluding that there is no Layer 2 path when any contiguous pair of Layer 3 devices  
13 has no subpath;  
14 eliminating extraneous devices in the subpaths; and  
15 concatenating the subpaths to result in creating and storing information representing  
16 the Layer 2 path when each of the contiguous pairs of Layer 3 devices has a  
17 subpath.

- 1 18. (Previously Presented) The computer-readable medium as recited in Claim 17,  
2 wherein determining a subpath for each contiguous pair of Layer 3 devices comprises  
3 the steps of:  
4 determining a first interface on a first node of the contiguous pair that is connected to  
5 a second interface on a second node of the contiguous pair for a given subnet  
6 when both the first node of the contiguous pair and the second node of the  
7 contiguous pair have non-trunking interfaces;  
8 determining a first native VLAN of the first interface and a second native VLAN the  
9 second interface;  
10 determining whether the first native VLAN matches the second native VLAN;  
11 selecting the matching VLAN as a relevant VLAN between the first and second nodes  
12 of the contiguous pair when the first native VLAN matches the second native  
13 VLAN;  
14 gathering a current spanning tree information for the relevant VLAN;  
15 tracing a first path segment from the first node of the contiguous pair to a root of the  
16 spanning tree by following the current spanning tree information associated  
17 with the relevant VLAN to the root of the spanning tree;  
18 tracing a second path segment from the second node of the contiguous pair to the root  
19 of the spanning tree by following the current spanning tree information  
20 associated with the relevant VLAN;  
21 eliminating extraneous devices in the first and second path segments; and  
22 concatenating the first path segment and the second path segment to result in creating  
23 and storing the subpath for the contiguous pair.



1 19. (Previously Presented) The computer-readable medium as recited in Claim 17,  
2 wherein determining a subpath for each contiguous pair of Layer 3 devices comprises  
3 the steps of:  
4 determining a non-trunking node of the contiguous pair when one of the nodes of the  
5 contiguous pair for a given subnet has a non-trunking interface and the other  
6 node of the contiguous pair has a trunking interface;  
7 determining the non-trunking interface on the non-trunking node of the contiguous  
8 pair as a first interface that is connected to a second interface on the other node  
9 of the contiguous pair;  
10 determining a native VLAN on the first interface;  
11 determining whether there is an active VLAN on the second interface that matches the  
12 native VLAN on the first interface;  
13 selecting the matching VLAN as a relevant VLAN between the non-trunking node and  
14 the other node of the contiguous pair when there is an active VLAN on the  
15 second interface that matches the native VLAN on the first interface;  
16 gathering a current spanning tree information for the relevant VLAN;  
17 tracing a first path segment from the non-trunking node of the contiguous pair to a root  
18 of the spanning tree by following the current spanning tree information  
19 associated with the relevant VLAN to the root of the spanning tree;  
20 tracing a second path segment from the other node of the contiguous pair to the root of  
21 the spanning tree by following the current spanning tree information associated  
22 with the relevant VLAN;  
23 eliminating extraneous devices in the first and second path segments; and  
24 concatenating the first path segment and the second path segment to result in creating  
25 and storing the subpath for the contiguous pair.

1 20. (Previously Presented) The computer-readable medium as recited in Claim 17,  
2 wherein determining a subpath for each contiguous pair of Layer 3 devices comprises  
3 the steps of:  
4 determining a first interface on a first node of the contiguous pair that is connected to  
5 a second interface on a second node of the contiguous pair for a given subnet

6           when both the first node of the contiguous pair and the second node of the  
7           contiguous pair have non-trunking interfaces; and  
8           determining a first active VLAN of the first interface associated with the given subnet  
9           and a second active VLAN the second interface associated with the given  
10          subnet;  
11          determining whether the first active VLAN matches the second active VLAN;  
12          selecting the matching VLAN as a relevant VLAN between the first and second nodes  
13          of the contiguous pair when the first active VLAN matches the second active  
14          VLAN;  
15          gathering a current spanning tree information for the relevant VLAN;  
16          tracing a first path segment from the first node of the contiguous pair to a root of the  
17          spanning tree by following the current spanning tree information associated  
18          with the relevant VLAN to the root of the spanning tree;  
19          tracing a second path segment from the second node of the contiguous pair to the root  
20          of the spanning tree by following the current spanning tree information  
21          associated with the relevant VLAN;  
22          eliminating extraneous devices in the first and second path segments; and  
23          concatenating the first path segment and the second path segment to result in creating  
24          and storing the subpath for the contiguous pair.

1   21.   (Cancelled).

1   22.   (Currently Amended) A computer apparatus comprising:  
2          a processor; and  
3          a memory coupled to the processor, the memory containing one or more sequences of  
4          instructions for determining a Layer 2 path between a source device and a  
5          destination device in a switched network, wherein execution of the one or more  
6          sequences of instructions by the processor causes the processor to perform the  
7          steps of:  
8          determining a Layer 3 path between the source device and the destination device,  
9          wherein the Layer 3 path comprises information identifying two or more Layer  
10         3 devices;

11 determining a subpath for each contiguous pair of Layer 3 devices in the Layer 3 path,  
12 based on a spanning tree that is associated with a relevant VLAN for said each  
13 contiguous pair of Layer 3 devices; and  
14 concatenating the subpaths to result in creating and storing information representing  
15 the Layer 2 path.

1 23. (Cancelled).

1 24. (Previously Presented) A network device that can determine a Layer 2 path between a  
2 source device and a destination device in a switched network comprising:  
3 a network interface;  
4 a processor coupled to the network interface and receiving information from the  
5 network interface; and  
6 a computer-readable medium accessible by the processor and comprising one or more  
7 sequences of instructions which, when executed by the processor, cause the  
8 processor to carry out the steps of:  
9 determining a Layer 3 path between the source device and the destination  
10 device, wherein the Layer 3 path comprises information identifying two  
11 or more Layer 3 devices;  
12 identifying contiguous pairs of Layer 3 devices in the Layer 3 path;  
13 determining a subpath for each contiguous pair of Layer 3 devices in the  
14 Layer 3 path;  
15 determining whether any contiguous pair of Layer 3 devices has no subpath;  
16 concluding that there is no Layer 2 path when any contiguous pair of Layer 3  
17 devices has no subpath;  
18 eliminating extraneous devices in the subpaths; and  
19 concatenating the subpaths to result in creating and storing information  
20 representing the Layer 2 path when each of the contiguous pairs of  
21 Layer 3 devices has a subpath.

1 25. (Previously Presented) A system for determining a Layer 2 path between a source  
2 device and a destination device in a switched network, the system comprising:

3 means for determining a Layer 3 path between the source device and the destination  
4 device, wherein the Layer 3 path comprises information identifying two or  
5 more Layer 3 devices;  
6 means for identifying contiguous pairs of Layer 3 devices in the Layer 3 path;  
7 means for determining a subpath for each contiguous pair of Layer 3 devices in the  
8 Layer 3 path;  
9 means for determining whether any contiguous pair of Layer 3 devices has no subpath;  
10 means for concluding that there is no Layer 2 path when any contiguous pair of  
11 Layer 3 devices has no subpath;  
12 means for eliminating extraneous devices in the subpaths; and  
13 means for concatenating the subpaths to result in creating and storing information  
14 representing the Layer 2 path when each of the contiguous pairs of Layer 3  
15 devices has a subpath.

1 26. (Currently Amended) A ~~method of~~ system for determining a Layer 2 path between a  
2 source device and a destination device in a switched network, the ~~method~~ system  
3 comprising ~~the computer implemented steps of~~:

4 means for determining a Layer 3 path between the source device and the destination  
5 device, wherein the Layer 3 path comprises information identifying two or  
6 more Layer 3 devices;  
7 means for determining a subpath for each contiguous pair of Layer 3 devices in the  
8 Layer 3 path, based on a spanning tree that is associated with a relevant VLAN  
9 for said each contiguous pair of Layer 3 devices; and  
10 means for concatenating the subpaths to result in creating and storing information  
11 representing the Layer 2 path.

1 27. (New) The computer apparatus as recited in Claim 22, wherein the one or more  
2 sequences of instructions for determining a subpath for each contiguous pair of  
3 Layer 2 devices further comprise one or more sequences of instructions which, when  
4 executed by the processor causes the process to perform the steps of:

5       determining a first interface on a first node of the contiguous pair that is connected to  
6             a second interface on a second node of the contiguous pair for a given subnet;  
7             and  
8       selecting the relevant VLAN between the first and second nodes of the contiguous pair  
9             based on the first and second interfaces; and  
10       gathering said current spanning tree information for the relevant VLAN.

1   28.   (New) The computer apparatus as recited in Claim 27, wherein the one or more  
2       sequences of instructions for selecting the relevant VLAN between the first and  
3       second nodes of the contiguous pair further comprise one or more sequences of  
4       instructions which, when executed by the processor causes the process to perform the  
5       steps of:  
6       selecting a matching native VLAN of the first and second nodes of the contiguous pair  
7             as the relevant VLAN when the first interface and the second interface of the  
8             first and second nodes respectively of the contiguous pair are non-VLAN  
9             trunking interfaces;  
10       selecting a matching active VLAN that is designated to carry traffic to a next hop as  
11             the relevant VLAN when the first interface and the second interface of the first  
12             and second nodes respectively of the contiguous pair are VLAN trunking  
13             interfaces; and  
14       selecting a native VLAN that is on a non-VLAN trunking interface as the relevant  
15             VLAN when one of the first and second nodes of the contiguous pair has the  
16             non-VLAN trunking interface.

1   29.   (New) The computer apparatus as recited in Claim 22, wherein the one or more  
2       sequences of instructions for determining a subpath for each contiguous pair of  
3       Layer 2 devices further comprise one or more sequences of instructions which, when  
4       executed by the processor causes the process to perform the steps of:  
5       tracing a first path segment from a first node of the contiguous pair by following the  
6             spanning tree associated with the relevant VLAN for the contiguous pair to a  
7             root of the spanning tree;

8 tracing a second path segment from a second node of the contiguous pair by following  
9 the spanning tree associated with the relevant VLAN for the contiguous pair to  
10 the root of the spanning tree; and  
11 concatenating the first and second path segments to result in creating and storing the  
12 subpath for the contiguous pair.

1 30. (New) The computer apparatus as recited in Claim 29, wherein the one or more  
2 sequences of instructions for concatenating the first path segment and the second path  
3 segment to result in creating and storing the subpath for the contiguous pair further  
4 include one or more sequences of instructions for eliminating extraneous devices from  
5 the first and second path segments.

1 31. (New) The computer apparatus as recited in Claim 22, wherein the one or more  
2 sequences of instructions for concatenating the subpaths to result in creating and  
3 storing information representing the Layer 2 path further include one or more  
4 sequences of instructions for eliminating extraneous devices from the subpaths.

1 32. (New) The network device as recited in Claim 24, wherein the one or more sequences  
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices  
3 further comprise one or more sequences of instructions which, when executed by the  
4 processor, cause the processor to carry out the steps of:  
5 determining a first interface on a first node of the contiguous pair that is connected to  
6 a second interface on a second node of the contiguous pair for a given subnet  
7 when both the first node of the contiguous pair and the second node of the  
8 contiguous pair have non-trunking interfaces;  
9 determining a first native VLAN of the first interface and a second native VLAN the  
10 second interface;  
11 determining whether the first native VLAN matches the second native VLAN;  
12 selecting the matching VLAN as a relevant VLAN between the first and second nodes  
13 of the contiguous pair when the first native VLAN matches the second native  
14 VLAN;  
15 gathering a current spanning tree information for the relevant VLAN;

16 tracing a first path segment from the first node of the contiguous pair to a root of the  
17 spanning tree by following the current spanning tree information associated  
18 with the relevant VLAN to the root of the spanning tree;  
19 tracing a second path segment from the second node of the contiguous pair to the root  
20 of the spanning tree by following the current spanning tree information  
21 associated with the relevant VLAN;  
22 eliminating extraneous devices in the first and second path segments; and  
23 concatenating the first path segment and the second path segment to result in creating  
24 and storing the subpath for the contiguous pair.

1 33. (New) The network device as recited in Claim 24, wherein the one or more sequences  
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices  
3 further comprises one or more sequences of instructions which, when executed by the  
4 processor, cause the processor to carry out the steps of:  
5 determining a non-trunking node of the contiguous pair when one of the nodes of the  
6 contiguous pair for a given subnet has a non-trunking interface and the other  
7 node of the contiguous pair has a trunking interface;  
8 determining the non-trunking interface on the non-trunking node of the contiguous  
9 pair as a first interface that is connected to a second interface on the other node  
10 of the contiguous pair;  
11 determining a native VLAN on the first interface;  
12 determining whether there is an active VLAN on the second interface that matches the  
13 native VLAN on the first interface;  
14 selecting the matching VLAN as a relevant VLAN between the non-trunking node and  
15 the other node of the contiguous pair when there is an active VLAN on the  
16 second interface that matches the native VLAN on the first interface;  
17 gathering a current spanning tree information for the relevant VLAN;  
18 tracing a first path segment from the non-trunking node of the contiguous pair to a root  
19 of the spanning tree by following the current spanning tree information  
20 associated with the relevant VLAN to the root of the spanning tree;

21 tracing a second path segment from the other node of the contiguous pair to the root of  
22 the spanning tree by following the current spanning tree information associated  
23 with the relevant VLAN;  
24 eliminating extraneous devices in the first and second path segments; and  
25 concatenating the first path segment and the second path segment to result in creating  
26 and storing the subpath for the contiguous pair.

1 34. (New) The network device as recited in Claim 24, wherein the one or more sequences  
2 of instructions for determining a subpath for each contiguous pair of Layer 3 devices  
3 further comprise one or more sequences of instructions which, when executed by the  
4 processor, cause the processor to carry out the steps of:  
5 determining a first interface on a first node of the contiguous pair that is connected to  
6 a second interface on a second node of the contiguous pair for a given subnet  
7 when both the first node of the contiguous pair and the second node of the  
8 contiguous pair have non-trunking interfaces; and  
9 determining a first active VLAN of the first interface associated with the given subnet  
10 and a second active VLAN the second interface associated with the given  
11 subnet;  
12 determining whether the first active VLAN matches the second active VLAN;  
13 selecting the matching VLAN as a relevant VLAN between the first and second nodes  
14 of the contiguous pair when the first active VLAN matches the second active  
15 VLAN;  
16 gathering a current spanning tree information for the relevant VLAN;  
17 tracing a first path segment from the first node of the contiguous pair to a root of the  
18 spanning tree by following the current spanning tree information associated  
19 with the relevant VLAN to the root of the spanning tree;  
20 tracing a second path segment from the second node of the contiguous pair to the root  
21 of the spanning tree by following the current spanning tree information  
22 associated with the relevant VLAN;  
23 eliminating extraneous devices in the first and second path segments; and  
24 concatenating the first path segment and the second path segment to result in creating  
25 and storing the subpath for the contiguous pair.



1 35. (New) The system as recited in Claim 25, wherein the means for determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises:  
3 means for determining a first interface on a first node of the contiguous pair that is  
4 connected to a second interface on a second node of the contiguous pair for a  
5 given subnet when both the first node of the contiguous pair and the second  
6 node of the contiguous pair have non-trunking interfaces;  
7 means for determining a first native VLAN of the first interface and a second native  
8 VLAN the second interface;  
9 means for determining whether the first native VLAN matches the second native  
10 VLAN;  
11 means for selecting the matching VLAN as a relevant VLAN between the first and  
12 second nodes of the contiguous pair when the first native VLAN matches the  
13 second native VLAN;  
14 means for gathering a current spanning tree information for the relevant VLAN;  
15 means for tracing a first path segment from the first node of the contiguous pair to a  
16 root of the spanning tree by following the current spanning tree information  
17 associated with the relevant VLAN to the root of the spanning tree;  
18 means for tracing a second path segment from the second node of the contiguous pair  
19 to the root of the spanning tree by following the current spanning tree  
20 information associated with the relevant VLAN;  
21 means for eliminating extraneous devices in the first and second path segments; and  
22 means for concatenating the first path segment and the second path segment to result  
23 in creating and storing the subpath for the contiguous pair.

1 36. (New) The system as recited in Claim 25, wherein the means for determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises:  
3 means for determining a non-trunking node of the contiguous pair when one of the  
4 nodes of the contiguous pair for a given subnet has a non-trunking interface  
5 and the other node of the contiguous pair has a trunking interface;

6 means for determining the non-trunking interface on the non-trunking node of the  
7 contiguous pair as a first interface that is connected to a second interface on the  
8 other node of the contiguous pair;  
9 means for determining a native VLAN on the first interface;  
10 means for determining whether there is an active VLAN on the second interface that  
11 matches the native VLAN on the first interface;  
12 means for selecting the matching VLAN as a relevant VLAN between the non-  
13 trunking node and the other node of the contiguous pair when there is an active  
14 VLAN on the second interface that matches the native VLAN on the first  
15 interface;  
16 means for gathering a current spanning tree information for the relevant VLAN;  
17 means for tracing a first path segment from the non-trunking node of the contiguous  
18 pair to a root of the spanning tree by following the current spanning tree  
19 information associated with the relevant VLAN to the root of the spanning  
20 tree;  
21 means for tracing a second path segment from the other node of the contiguous pair to  
22 the root of the spanning tree by following the current spanning tree information  
23 associated with the relevant VLAN;  
24 means for eliminating extraneous devices in the first and second path segments; and  
25 means for concatenating the first path segment and the second path segment to result  
26 in creating and storing the subpath for the contiguous pair.

- 1 37. (New) The system as recited in Claim 25, wherein the means for determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises:  
3 means for determining a first interface on a first node of the contiguous pair that is  
4 connected to a second interface on a second node of the contiguous pair for a  
5 given subnet when both the first node of the contiguous pair and the second  
6 node of the contiguous pair have non-trunking interfaces; and  
7 means for determining a first active VLAN of the first interface associated with the  
8 given subnet and a second active VLAN the second interface associated with  
9 the given subnet;

10 means for determining whether the first active VLAN matches the second active  
11 VLAN;  
12 means for selecting the matching VLAN as a relevant VLAN between the first and  
13 second nodes of the contiguous pair when the first active VLAN matches the  
14 second active VLAN;  
15 means for gathering a current spanning tree information for the relevant VLAN;  
16 means for tracing a first path segment from the first node of the contiguous pair to a  
17 root of the spanning tree by following the current spanning tree information  
18 associated with the relevant VLAN to the root of the spanning tree;  
19 means for tracing a second path segment from the second node of the contiguous pair  
20 to the root of the spanning tree by following the current spanning tree  
21 information associated with the relevant VLAN;  
22 means for eliminating extraneous devices in the first and second path segments; and  
23 means for concatenating the first path segment and the second path segment to result  
24 in creating and storing the subpath for the contiguous pair.

1 38. (New) The system as recited in Claim 26, wherein the means for determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises:  
3 means for determining a first interface on a first node of the contiguous pair that is  
4 connected to a second interface on a second node of the contiguous pair for a  
5 given subnet; and  
6 means for selecting the relevant VLAN between the first and second nodes of the  
7 contiguous pair based on the first and second interfaces; and  
8 means for gathering said current spanning tree information for the relevant VLAN.

1 39. (New) The system as recited in Claim 38, wherein the means for selecting the  
2 relevant VLAN between the first and second nodes of the contiguous pair further  
3 comprises:  
4 means for selecting a matching native VLAN of the first and second nodes of the  
5 contiguous pair as the relevant VLAN when the first interface and the second  
6 interface of the first and second nodes respectively of the contiguous pair are  
7 non-VLAN trunking interfaces;

8 means for selecting a matching active VLAN that is designated to carry traffic to a  
9 next hop as the relevant VLAN when the first interface and the second  
10 interface of the first and second nodes respectively of the contiguous pair are  
11 VLAN trunking interfaces; and

12 means for selecting a native VLAN that is on a non-VLAN trunking interface as the  
13 relevant VLAN when one of the first and second nodes of the contiguous pair  
14 has the non-VLAN trunking interface.

1 40. (New) The system as recited in Claim 26, wherein the means for determining a  
2 subpath for each contiguous pair of Layer 3 devices further comprises:  
3 means for tracing a first path segment from a first node of the contiguous pair by  
4 following the spanning tree associated with the relevant VLAN for the  
5 contiguous pair to a root of the spanning tree;  
6 means for tracing a second path segment from a second node of the contiguous pair by  
7 following the spanning tree associated with the relevant VLAN for the  
8 contiguous pair to the root of the spanning tree; and  
9 means for concatenating the first and second path segments to result in creating and  
10 storing the subpath for the contiguous pair.

1 41. (New) The system as recited in Claim 40, wherein the means for concatenating the  
2 first path segment and the second path segment to result in creating and storing the  
3 subpath for the contiguous pair includes means for eliminating extraneous devices  
4 from the first and second path segments.

1 42. (New) The system as recited in Claim 26, wherein the means for concatenating the  
2 subpaths to result in creating and storing information representing the Layer 3 path  
3 includes means for eliminating extraneous devices from the subpaths.